

Appl. No. 10/782,545  
Amdt. Dated July 26, 2005

Attorney Docket No.: NSL-025  
Reply to Office Action of May 25, 2005

### COMPLETE LISTING OF ALL CLAIMS

Kindly cancel claim 1, amend claims 2, 22 and 25-33 and add new claim 34 as shown in the listing of claims below. This listing of claims will replace all prior versions, and listings of claims in the application.

- 1 1. (cancel)
- 1 2. (currently amended) ~~The method of claim 1~~ A method for treating a substrate surface,  
2 comprising the steps of:  
3 coiling one or more substrates into one or more coils in such a way that adjacent turns of the  
4 coils do not touch one another;  
5 placing the one or more coiled substrates in a treatment chamber; and  
6 in the treatment chamber, treating substantially an entire surface of the one or more coiled  
7 substrates with a surface treatment process, wherein the surface treatment process includes  
8 one or more atomic layer deposition (ALD) reactions.
- 1 3. (original) The method of claim 2 wherein the one or more ALD reactions include exposing  
2 the surface of the coiled substrate to a reactant vapor of the type  $MCl_x$ , where M is a metal  
3 and x is an integer from one to four.
- 1 4. (original) The method of claim 3, wherein the one or more ALD reactions include exposing  
2 the surface of the coiled substrate to water vapor.
- 1 5. The method of claim 3 wherein  $MCl_x$  is  $TiCl_4$ .
- 1 6. (withdrawn) The method of claim 1 wherein the surface treatment process includes  
2 anodization.
- 1 7. (withdrawn) The method of claim 1 wherein the surface treatment process includes drying.
- 1 8. (withdrawn) The method of claim 1 wherein the surface treatment process includes  
2 annealing.
- 1 9. (withdrawn) The method of claim 1 wherein the surface treatment process includes exposure  
2 to reactive gas or vapor.
- 1 10. (withdrawn) The method of claim 9 wherein the exposure to reactive gas or vapor includes  
2 selenization.
- 1 11. (withdrawn) The method of claim 1 where the surface treatment includes anodization.

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- 1 12. (withdrawn) The method of claim 1 where the surface treatment includes electrodeposition.
- 1 13. (withdrawn) The method of claim 1 where the surface treatment includes electropolishing.
- 1 14. (currently amended) The method of claim [[1]] 2 wherein coiling the substrate includes  
2 attaching an end of a roll of substrate material to a carousel, rotating the carousel while  
3 unrolling the substrate material from the roll to coil the substrate around the carousel, and  
4 placing one or more spacers between adjacent layers of the coiled substrate before the  
5 carousel completes a turn.
- 1 15. (original) The method of claim 14 wherein each spacer touches a back surface of the  
2 substrate but not a front surface of the substrate.
- 1 16. (original) The method of claim 14 wherein placing one or more spacers includes stacking one  
2 or more spacers on top of one another.
- 1 17. (currently amended) The method of claim [[1]] 2 wherein coiling the substrate includes  
2 attaching an end of a roll of substrate material to a carousel, moving the roll of substrate  
3 material around the carousel while unrolling the substrate material from the roll to coil the  
4 substrate around the carousel, and placing spacers between adjacent layers of the coiled  
5 substrate before the roll completes a turn about the carousel.
- 1 18. (currently amended) The method of claim [[1]] 2 wherein the one or more substrates include  
2 two or more substrates coiled side-by-side on a carousel.
- 1 19. (currently amended) The method of claim [[1]] 2 wherein coiling one or more substrates into  
2 one or more coils in such a way that adjacent turns of the coils do not touch one another  
3 includes placing a spacer tape between adjacent turns of the substrate.
- 1 20. (original) The method of claim 19 wherein the spacer tape is orientated substantially parallel  
2 to a length of the substrate.
- 1 21. (original) The method of claim 19 wherein the spacer tape includes one or more passages  
2 running substantially along a width of the spacer tape.
- 1 22. (currently amended) ~~The method of claim 1~~ A method for treating a substrate surface,  
2 comprising the steps of:  
3 coiling one or more substrates into one or more coils in such a way that adjacent turns of the  
4 coils do not touch one another;

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5 placing the one or more coiled substrates in a treatment chamber; and  
6 in the treatment chamber, treating substantially an entire surface of the one or more coiled  
7 substrates with a surface treatment process.

8 wherein coiling one or more substrates includes attaching two substrates together back-to-  
9 back to form a dual substrate and coiling the dual substrate.

1 23. (original) The method of claim 22, further comprising separating the two substrates after they  
2 have been treated in the treatment chamber.

1 24. (withdrawn) A substrate surface treatment system, comprising:

2 a surface treatment chamber;

3 a carousel adapted to receive a flexible substrate material as a coil, the carousel being sized  
4 to be received within the chamber with the substrate material coiled around the carousel in  
5 one or more turns;

6 a winding mechanism configured to coil the substrate material about the carousel to form a  
7 coiled substrate; and

8 one or more spacers, the spacers being configured to space apart adjacent turns of the coiled  
9 substrate in such a way that the adjacent turns of the coiled substrate do not touch one  
10 another; and

11 a mechanism adapted to place one or more of the spacers between adjacent layers of the  
12 coiled substrate before the winding mechanism winds a full turn of the substrate material  
13 about the carousel.

1 25. (withdrawn, currently amended) The system of claim [[22]] 24, further comprising one or  
2 more sources of reactant gas coupled to the chamber, the reactant gas being of a type suitable  
3 for performing atomic layer deposition.

1 26. (withdrawn, currently amended) The system of claim [[22]] 24, wherein the chamber is an  
2 anodization chamber.

1 27. (withdrawn, currently amended) The system of claim [[22]] 24, wherein the carousel is in the  
2 shape of a polygonal cylinder.

1 28. (withdrawn, currently amended) The system of claim [[25]] 27 wherein the carousel is in the  
2 shape of a hexagonal cylinder.

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- 1 29. (withdrawn, currently amended) The system of claim ~~[[22]]~~ 24 wherein the spacers can be  
2 secured in place with respect to the carousel.
- 1 30. (withdrawn, currently amended) The system of claim ~~[[22]]~~ 24 wherein the spacers can stack  
2 on top of one another.
- 1 31. (withdrawn, currently amended) The system of claim ~~[[22]]~~ 24, wherein the spacers include  
2 one or more spacer tapes.
- 1 32. (withdrawn, currently amended) The system of claim ~~[[29]]~~ 31 wherein the spacer tapes run  
2 substantially parallel to a length of the substrate.
- 1 33. (withdrawn, currently amended) The system of claim ~~[[29]]~~ 31 wherein at least one spacer  
2 tapes is located proximate a side of the substrate.
- 1 34. (new) An apparatus for treating a substrate surface, comprising:  
2 means for coiling one or more substrates into one or more coils in such a way that adjacent  
3 turns of the coils do not touch one another;  
4 treatment chamber means; and  
5 means for treating in the treatment chamber substantially an entire surface of the one or more  
6 coiled substrates with a surface treatment process;  
7 wherein the surface treatment process includes one or more atomic layer deposition (ALD)  
8 reactions.